CHAPTER 1.
INTRODUCTION

1.1 PURPOSE

The *2006 King County Flood Hazard Management Plan* recommends regional policies, programs, and projects to reduce the risk to people and property from river flooding and channel migration in King County. The purpose of this Plan is to create a long-term vision for flood hazard management for King County's floodplains, with an emphasis on major river systems, and to recommend specific near-term actions consistent with that vision. Whenever possible, flood hazard management recommendations identify the actions King County may take to reduce flood and channel migration risks and to protect, restore or enhance riparian and aquatic ecosystems.

This Plan updates the 1993 *Flood Hazard Reduction Plan* and addresses the following factors:

- **Changes in river watershed conditions and flood characteristics**—River flows and conditions are affected over time by many factors, including completion of flood hazard reduction projects, natural geomorphic processes, new development in upland or floodplain areas, changes in flow management for reservoirs in the upper watershed, and climate changes.
- **Changes in state and federal requirements**—Amendments to the Washington State Growth Management Act and adoption of the federal Disaster Mitigation Act of 2000 have direct implications for flood hazard management programs. Similarly, new environmental protections, such as the listings for Chinook salmon and bull trout as threatened under the federal Endangered Species Act and development of regional salmon habitat recovery plans, affect activities in river corridors.
- **Eligibility for flood-related grants and programs**—To remain eligible and competitive in federal and state programs that provide assistance to local communities for flood hazard management, such as the National Flood Insurance Program, the Community Rating System, the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, the Pre-Disaster Mitigation Grant Program, and the Washington State Flood Control Assistance Account Program, the Plan must be consistent with the various programs' requirements.

1.2 GOALS AND OBJECTIVES

King County is home to six major river watersheds that carry flows from the Cascade Mountains to Puget Sound. These rivers—the South Fork Skykomish, Snoqualmie, Sammamish, Cedar, Green and White—pass through lands ranging in use from forested to agricultural to highly urbanized. If the flood and channel migration hazards associated with these rivers are not well managed, they can pose extensive risks to people who live and work in the river floodplains. Goals and objectives for the *2006 King County Flood Hazard Management Plan* were developed at the beginning of the planning process to set a vision for how flood hazards should be managed in King County in order to reduce the risks to people and property. These goals and objectives will be achieved initially through a 10-Year Action Plan, which identifies the programs, projects and technical studies that will be implemented with status quo funding over the next ten years. The Action Plan also identifies additional or expanded programs, projects and technical studies that may be implemented with enhanced funding. The Action Plan was developed to meet the requirements of the Community Rating System Activity 511, Step 8 of the National Flood Insurance Program. The Action Plan is provided in Appendix F of this Plan and is discussed in Chapters 5, 6 and 7.

"Goals" describe the long-term outcomes the Plan is trying to reach. The goals of the *2006 King County Flood Hazard Management Plan* are:

1. To reduce the risks from flood and channel migration hazards.
2. To avoid or minimize the environmental impacts of flood hazard management.
3. To reduce the long-term costs of flood hazard management.

The success of the Plan, once implemented, will be measured by the extent to which these goals are achieved.

"Objectives" are the set of flood hazard management actions that will lead to achieving the identified goals. These objectives are:

1. Evaluate the risks to existing development in flood hazard areas and identify actions to reduce risks to life and property.
2. Manage land uses in hazardous areas in order to prevent creation of new flood risks.
3. Identify and map flood and channel migration hazard areas and make maps readily available to the public.
4. Maintain a regionally coordinated flood warning and emergency response program in a state of readiness to be activated in the event of a flood.
5. Maintain, repair, or retrofit existing flood protection facilities in a manner that addresses public safety, is cost-effective and makes the facilities less susceptible to future damage.
6. Acquire vulnerable properties, with a special emphasis on those that have been repeatedly damaged by floods, when acquisition opportunities arise.
7. Remove or retrofit existing river facilities or modify maintenance practices to protect, restore or enhance riparian habitat and to support recovery of species listed under the Endangered Species Act.
8. Prioritize flood hazard management project and program recommendations based on level of risk, cost-effectiveness over the long term, and consistency with regional natural resource management protocols.
9. Sponsor and support public outreach and education activities to improve awareness of flood hazards, and recommend actions that property owners can take to reduce risks to themselves and to others.
10. Manage activities in rivers and floodplains in a manner compatible with multiple and sometimes competing uses, including existing and proposed urban development within cities, flood and channel migration risk reduction, agriculture, fish and wildlife habitat improvements, open space, recreation, water supply and hydropower.
11. Promote the economic and ecological sustainability of river corridors.
12. Coordinate across King County departments and with other jurisdictions to provide consistency in flood hazard management and disaster response activities.
13. Identify appropriate funding sources for implementing the recommended flood hazard management activities, and pursue opportunities to use these funds in a timely and efficient manner.
14. Update the *2006 King County Flood Hazard Management Plan* regularly and employ adaptive management strategies within King County's River and Floodplain Management

Program in order to take full advantage of scientific and technological advances, and to use the best available floodplain management practices, principles and information.

1.3 GUIDING PRINCIPLES

Guiding principles are the facts and technical understanding that direct flood hazard management in King County. They include statements of fact and agreed-upon public policy values. This set of guiding principles articulates a shared understanding about flooding and the identity, role and responsibility of King County in providing flood hazard management services. These guiding principles serve as a frame of reference for evaluating flood risks, identifying the range of management alternatives and developing recommendations.

1. Flooding is a natural process.

Flooding is a natural process that provides many benefits, but severe floods also may have deleterious impacts on aquatic and riparian habitat. Flooding poses a risk when people and property occupy areas that are subject to inundation, bank erosion or channel migration. Risk can most effectively be reduced through comprehensive flood hazard management actions that employ both structural and non-structural approaches to create a safe, effective and sustainable means for conveying floodwaters and that are consistent with other uses that rely on natural river processes.

2. The primary purpose of the recommendations in this Plan is to reduce risks to public safety and financial losses from flooding and channel migration on mainstem river corridors and floodplains within King County. This responsibility is undertaken while taking into account other uses within floodplains, such as existing development, fish and wildlife habitat, open space, agriculture and recreation.

Reducing the risk to humans from flooding and channel migration has long-term consequences not only for people and property but also for many other uses and function of the floodplain. It is essential that public health and safety needs be balanced with other needs and uses within the riverine environment. An integrative approach that balances multiple river corridor management objectives will provide the greatest public benefit.

3. Flood damage creates financial costs, both public and private. Effective flood hazard management can reduce long-term flood damage costs.

Public infrastructure, such as roads, utilities, levees, revetments and dams, and private improvements, such as homes, businesses, and structures located in the floodplain, are vulnerable to flood damage. As the budgets of federal, state and local governments tighten, the amount of money available for flood hazard management is reduced. Application of appropriate technologies, judicious regulations, and common sense in selecting flood hazard management programs and projects can lead to more flood-resistant communities and lower long-term repair and emergency response costs.

4. A river and its valley floor, including adjacent floodplains, floodways, and potential channel migration areas, constitute a corridor through which floodwaters flow and within which opportunities exist for various land uses, including, agriculture, recreation and open space.

Rivers and their corridors provide a range of values and uses. When structures and other forms of development, such as agriculture or trails, occupy river corridors, they may be at risk from floodwater inundation, channel migration or both. Site-specific actions must be selected that take into account the

cumulative impact on the corridor. A long-term plan for flood hazard management in river corridors allows for the free and natural flow of floodwaters and channel migration to the greatest extent practicable, while minimizing uses that exacerbate or are incompatible with flooding.

5. Actions in the upland portions of watersheds impact flooding and channel migration within the river corridor.

Factors that lead to flooding begin upland of the rivers and streams. The conversion of forested land to grass or impervious surface increases the speed and quantity of stormwater runoff. In addition, forest loss and grading that changes the natural topography of the landscape can alter the location at which water leaves a site. Stormwater design standards should be applied to upland development to minimize stormwater impacts at lower elevations.

6. Biological productivity and diversity are sustained by natural processes, such as flooding, when critical natural processes mimic pre-development rates and magnitudes.

Flooding is a catalyst for geomorphic and biological processes. Geomorphic processes include bank and bed erosion, channel migration, and the recruitment, transport and deposition of sediment, nutrients and woody debris. Biological processes include speciation, vegetation succession, and habitat-forming processes by species, such as dam building by beavers and redd construction by salmon. The long-term survival and productivity of naturally occurring populations of many native species depends on the continuation of these processes. Natural processes that are protected and, when necessary, restored, will help reduce risks to, and provide sustainability for, natural ecosystem processes and the species that rely on them. Conversely, catastrophic or excessively frequent floods can kill or displace animals, and sweep away their nests and young, sometimes in highly dramatic ways, leaving fewer but presumably more fit individuals. Thus floods can present both long-term, systematic benefits and short-term problems.

7. Protecting and working with, rather than against, natural riverine processes generally will reduce flood risks to people and property in a less costly manner than traditional structural approaches to flood hazard management, while also benefiting native fish and wildlife and preserving aesthetic landscapes.

A flood hazard management approach that accommodates a river's flows, flooding and erosion rather than deflecting or redirecting those flows will tend to be self-maintaining and less likely to cause new flood risks to adjacent properties or exacerbate existing ones. Such an approach will also tend to support other natural functions and values within the river corridor and be less costly.

8. Communication with, and involvement of, citizens and stakeholders and public and private landowners is vital in developing a responsible, effective flood hazard management plan.

Citizens and stakeholders including public and private landowners offer a wide range of perspectives and experiences related to flooding that are invaluable in helping create the vision for flood hazard management in King County. By encouraging their participation, King County recognizes that citizens, stakeholders, and public and private property owners are affected by the decisions made by public agencies. In return, it is incumbent on citizens, stakeholders, and public and private property owners to understand the effects and limitations of flood hazard management actions and to act responsibly to help reduce risks to themselves and others.

9. Private property rights should be respected when providing flood protection.

The right to privately owned property is one of the fundamental principles that the rule of public law supports in this country. Actions on an individual property can affect neighboring private or public properties, as well as public resources such as public infrastructure, water, fish and wildlife, and so must be coordinated within a regional regulatory framework. Regulation of private land assumes that property owners continue to exercise certain rights over the use of their property when their actions do not adversely affect others.

10. Cooperation among involved public agencies is essential for the success of long-term comprehensive flood hazard management.

Comprehensive and long-term flood hazard management often involves multiple jurisdictions, agencies, and County departments. King County should pursue collaborative solutions, whenever feasible, to ensure that flood risks are addressed in an efficient, cost-effective, and substantive manner.

11. Advances in technical information and an evolving understanding of flood risks call for an adaptive management approach to implementing the 2006 King County Flood Hazard Management Plan.

As technical information about King County's flood hazard management corridors evolves, Plan implementation activities will be reevaluated and adjusted to use the newest information. Plan priorities may change over time to reflect the River and Floodplain Management Program's developing understanding of the level of risk that flooding and channel migration pose to human safety and regional economic activity, and the effectiveness of current flood risk reduction strategies. The River and Floodplain Management Program will use performance measures to evaluate Plan implementation.

1.4 GEOGRAPHIC SCOPE

The geographic scope of the *2006 King County Flood Hazard Management Plan* includes all unincorporated and incorporated areas of King County. The focus of the Plan is to address flood hazards associated with King County's six major river systems, which are the South Fork Skykomish, Snoqualmie, Sammamish, Cedar, Green and White Rivers, and their significant tributaries, the Tolt, Raging, Miller and Greenwater Rivers. The Plan also addresses flood hazards along other tributaries and smaller streams, including, but not limited to those with existing flood protection facilities such as Tokul Creek, Kimball Creek, Coal Creek (Snoqualmie), Issaquah Creek, Fifteen Mile Creek, and Holder Creek.

The ongoing floodplain management program in King County is comprehensive and is implemented at a multiple-agency level. This level of management has evolved in response to state and federal mandates and, more importantly, the County's response to local flooding conditions. The *2006 King County Flood Hazard Management Plan* complements and supports actions implemented under other King County programs relevant to the management of floodplains on smaller tributaries and water bodies. These programs include, but are not limited to, basin planning, lake management planning and the management of storrmwater runoff using the *King County Surface Water Design Manual*. The elements of this Plan are relevant and applicable to all floodplains within the County.

Map 1-1 (http://dnr.metrokc.gov/wlr/flood/fhmp/pdf/1-1.pdf) shows the area covered by the Plan and the mapped hazard areas along the major rivers and their larger tributaries.

1.5 KING COUNTY'S PLANNING AUTHORITY AND FRAMEWORK

Section 86.12.210 of the Revised Code of Washington (RCW 86.12.210) authorizes the legislative body of any county to adopt a comprehensive flood hazard management plan for any drainage basin located wholly or partially within the county. The plan must meet certain minimum requirements if it is an element for which the county seeks credit in the National Flood Insurance Program's Community Rating System, which underwrites flood insurance for floodplain property owners and businesses, and the requirements adopted by the Washington State Department of Ecology for floodplain management (44 CFR Part 60.3; Chapter 86.26 RCW; Chapter 86.16 RCW and Chapter 173-145 WAC).

A comprehensive flood hazard management plan must also be developed within King County's planning framework, which has multiple levels, including multi-county, county-wide, subarea, functional and neighborhood planning. King County's planning framework was developed to implement the requirements of the Washington State Growth Management Act, which was adopted in 1990 by the State Legislature in part in response to a rapid rate of growth in the Puget Sound region. The *2006 King County Flood Hazard Management Plan* is adopted as a technical appendix to the *King County Comprehensive Plan* for protection of frequently flooded areas, as required by the Growth Management Act. The *2006 King County Flood Hazard Management Plan* also functions as the updated flood hazard portion of the *King County Regional Hazard Mitigation Plan*, which was adopted for compliance with the federal Disaster Mitigation Act of 2000; it also serves as the flood hazard management plan for the Green River Flood Control Zone District and other such special purpose districts enacted by King County for implementation of this Plan.

1.6 PLANNING PROCESS

The *2006 King County Flood Hazard Management Plan* was developed using the 10-Step Planning Process outlined in the Community Rating System of the Federal Emergency Management Agency's National Flood Insurance Program (FEMA 2006); details on the program can be found in Appendix A. Stakeholder involvement was key throughout all stages of development of the Plan. The overall development of the Plan was managed by a three-member planning team with contributions from River and Floodplain Management Program staff as well as Water and Land Resources Division staff. The King County project team had extensive experience in planning, surface water management engineering, environmental and conservation project management, plan and policy development, and code writing in King County and other jurisdictions.

A 13-member Advisory Committee was established in 2004 to help guide development of this Plan by County staff. The Committee reflected urban and rural floodplain interests and included members from major industries in the region, a non-profit environmental group, water resource engineering, wetland biology and botany, a recreational boater and angler, and a Certified Floodplain Manager. Over 50 percent of the members live or work in floodplains.

The process of defining the scope of the *2006 King County Flood Hazard Management Plan* began in 2003. A scoping meeting was held with federal, state and local agencies, cities, other counties and local tribes. Public "open house" workshops were held in each of the major river watersheds in the summer of 2004. Further refinement of the scope was provided through interviews with County staff and from Advisory Committee recommendations. Preliminary consideration of ecological issues was provided through the *Programmatic Biological Effects Analysis: King County River Management Program* (Johnson et al, 2003).

The River Management Program was the King County program that implemented programs and projects outlined in the 1993 Plan; the River Management Program was renamed the River and Floodplain

Management Program in 2006. This biological-effects analysis evaluated the impacts of the River Management Program on threatened or endangered species. The evaluation concluded that River Management Program maintenance projects were yielding intermediate to long-term improvements to salmonid habitats. However, given the small number and size of maintenance projects completed compared to impacts from previous extensive flood control actions, the River Management Program has been able to make only a small overall improvement to aquatic and riparian habitats. Input from all these sources helped to frame the issues to be addressed and to formulate the goals and objectives of this Plan.

Ongoing guidance was provided by the Advisory Committee throughout development of the Plan. The Committee met for 18 months (see Appendix A) in an advisory role and reviewed the draft Plan in detail before the draft Plan was transmitted to the King County Council. Meetings were held with a wide range of stakeholders, including incorporated cities, commissions, Native American tribes and agencies in King County, to discuss a range of potential program and policy recommendations. Starting February 6, 2006, a seven week-long public review and comment period was conducted to inform Plan development. During the public review and comment period, two county-wide public meetings were held to receive comments and recommendations associated with the draft Plan.

1.7 FUTURE UPDATES

The *2006 King County Flood Hazard Management Plan* will be updated every five years, in accordance with Community Rating System requirements. Additionally, progress of the Plan will be monitored annually in the form of a progress report as required by the Community Rating System annual recertification process. Specific information to be addressed in future updates includes an updated identification and delineation of flood hazard areas based on any flooding that had occurred since the last revision; new mapping; annexations and incorporations; changes in repetitive loss properties; increases in development within the floodplain or watershed; changes in flood protection facilities; and project and program flood risk reduction recommendations. Future Plan updates will be developed with input from agency, citizen and other stakeholders. New information and refined knowledge will inform the adaptive management implementation framework, update processes, and maintain the relevance of this Plan.

Map 1-1

http://dnr.metrokc.gov/wlr/flood/FHMP/pdf/Map%201-1.pdf